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guages, in Le Muséon, Vol. III, 517–651; and Daniel G. Brinton publishes in the Proc. Am. Phil. Soc., No. 115, pp. 345–412, a grammar of the Cakchiquel language of Guatemala.

MICROSCOPY.[1]

MAYER'S CARBOLIC ACID SHELLAC.—Finding that clove oil and creosote produce fine granulations when used in the ordinary shellac method, Dr. Paul Mayer has adopted a new method of dissolving the shellac, by which an excellent fixative is obtained that never shows any traces of granulation. The fixative is applied by a fine brush to the *cold* slide.

Mayer prepares the solution in the following manner:

1. Dissolve one part of bleached shellac in five parts of absolute alcohol.

2. Filter the solution and evaporate the alcohol on a water-bath. A yellowish residue quite stiff when cold is thus obtained. If any cloudiness arises during evaporation, the solution must be filtered again.

3. Dissolve the shellac residue in pure carbolic acid on a water-bath. A concentrated solution of carbolic acid is obtained by exposing the crystals to the air until they dissolve, or by adding a small amount of water (about five per cent).

The quantity of acid should be sufficient to give a thickish liquid when cold.

This fixative is painted on to the cold slide with a brush, at the time of using. The sections are then placed, and the slide left in the oven of a water-bath for some minutes (10–15 minutes I find sufficient). The carbolic acid is thus evaporated, leaving a perfectly transparent stratum of shellac on the slide. The sections are next freed from paraffine in the ordinary way and mounted in balsam.

This method is considered to be the best and simplest for fixing *stained* sections.

The shellac can be dissolved directly in carbolic acid, but then the fluid must stand a long time in order to become clear, as it cannot be filtered. For this reason it is preferable to dissolve first in alcohol.

NOTE.—According to a note just received, Mayer now prepares the shellac as follows:

The shellac is pulverized and heated with crystals of colorless carbolic acid until it dissolves. In filtering the funnel should be heated over a flame. It will filter slowly but quite well. If it is too thick crystals of carbolic acid may be added until the desired consistency is reached.

AN ETHER FREEZING APPARATUS.[2]—A very simple and convenient little freezing apparatus, which can be used with almost any microtome, has recently been described by W. Emil Bœcker.

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[1] Edited by Dr. C. O. WHITMAN, Mus. Comp. Zool., Cambridge, Mass.

[2] Zeitschr. f. Instrumentenkunde. Apr., 1884, pp. 126–127.

Following the principle of the Lewes and the Ray[1] instruments, the ether spray is thrown on the under side of the object-plate instead of on the object itself.

The apparatus consists of a short cylinder (Fig. 1 *A*), closed by the plate, *P*, on which the object is placed for freezing. A metallic tube (*a*) drawn to a fine point penetrates the base of the cylinder, and another (*b*) its side. The vertical tube (*a*) is connected by rubber tubing with a small bellows, while the horizontal tube (*b*) is similarly connected with a glass tube which passes through the stopper of a bottle containing ether, reaching nearly to the bottom. When the bellows is set in motion the current of air throws the ether spray against the plate, *P*, and the rapid evaporation thus produced soon lowers the temperature sufficiently to freeze the object. The ether vapor and the air escape through a series of holes in the side of the cylinder. A third tube (*c*) connects with a second glass tube that extends barely through the stopper of the bottle of ether, and thus provides for the admission of air into the bottle and for the escape of the excess of condensed ether.

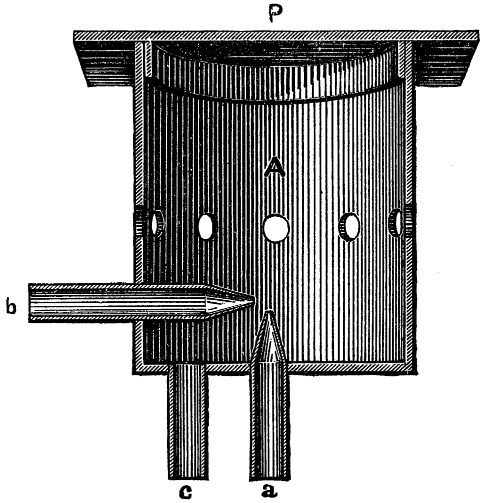

FIG. 1.—Freezing cylinder seen in section.

The cylinder is small enough to be received by the holder of the microtome. It is to be obtained from W. Emil Boecker, in Wetzlar, Germany, at sixteen and a half marks ($4.25).

The Roy microtome, referred to above, is made by Schaure, Pathologische Institut, Liebig-Strasse, Leipzig.

A NEW FREEZING MICROTOME.—Dr. F. O. Jacobs, of Newark, O., has devised the freezing microtome shown in Figs. 1 and 2.

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[1] Arch. f. mikr. Anat., XIX, pp. 137–143, Pl. VI, 1880.

It consists of a copper rod, *A*, two inches or more in diameter and six inches high, inclosed by an inner zinc (*b*) and an outer brass tank (*c*). Above is the table, *D*, working on a fine screw (*d*). Through the center of the table passes a narrower portion of the copper rod, the piston (*p*).

When the inner tank is filled with a mixture of salt, ice and water, the temperature of the copper rod is so reduced as to freeze any object (*F*) placed on its upper end. The size of the rod is such that its temperature will remain very steady for from four to six hours without any further care on the part of the operator.

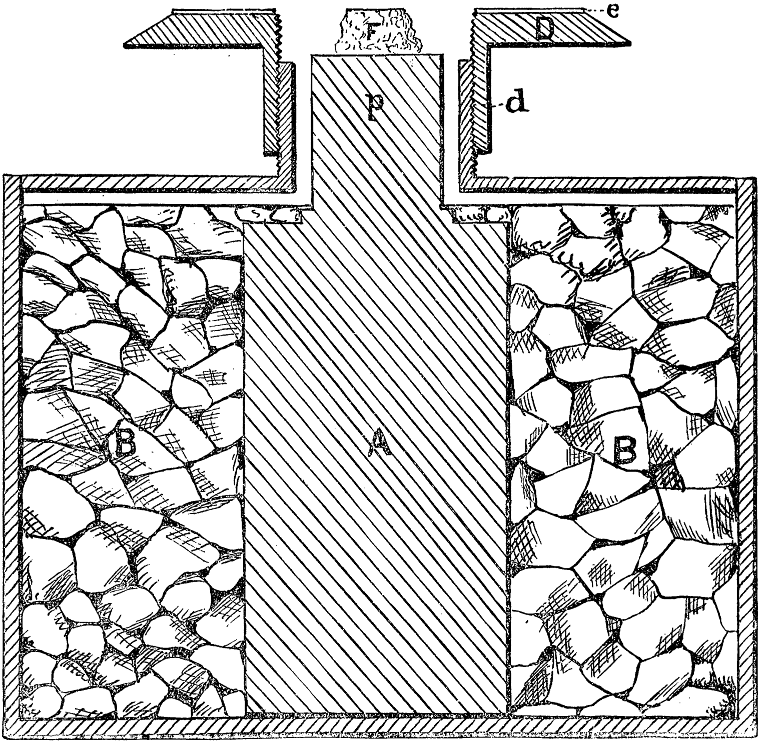

FIG. 1.—Freezing microtome.

By this arrangement, the advantages of which will be readily seen, objects can be easily frozen, and without any slop or "muss."

The imbedding medium is composed of:

Gum arabic	5 parts.
Gum tragacanth	1 "
Gelatine	1 "

The mixture is dissolved in enough warm water to give it the consistency of thin jelly when cold. A little glycerine (1 : 6) is added to the water.

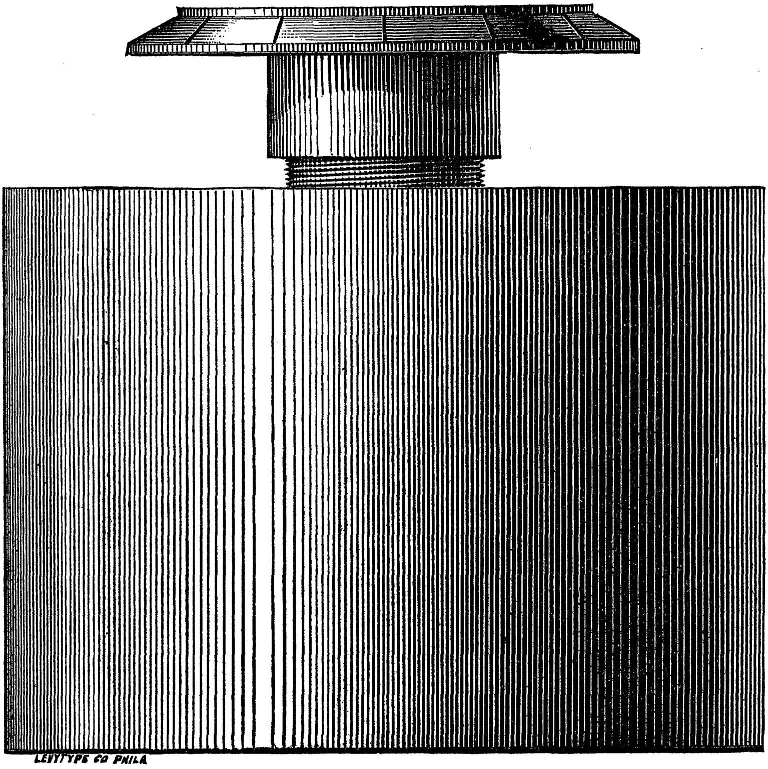

FIG. 2.—Section of the same.

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SCIENTIFIC NEWS.

— Under the title "Elephant pipes in the museum of the Academy of Natural Science, Davenport, Iowa," Mr. Charles E. Putnam enters a vigorous and well written protest against the criticisms and insinuations which have been made against the character of the discoverer and the authenticity of the elephant pipes in the museum of the Davenport Academy. The article is racy reading, and incidentally gives strong arguments against the desire for centralization in science shown in certain quarters. It will be found impossible to concentrate all science in any one clique or city. Our local societies and scattered observers need not feel that their efforts are not as valuable in their way as the labors of government officials and closet or office naturalists.